



Transition from Physical to Financial Rights in RTO West FERC Technical Conference on Transition to CRRs

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RTO West is still under construction and many details of its proposed market design including congestion management and financial rights are still being developed. The RTO West (RTOW) participants have developed a proposed Congestion Management system that differs slightly from the Commission's proposed Standard Market Design (SMD) rule. Such variation is necessary to accommodate the unique attributes of the Pacific Northwest's hydro-thermal system, certain physical characteristics of the Northwest (NW) and Western Interconnection (WI), and the large percentage of non-jurisdictional utilities that provide service within the NW transmission footprint, which covers nine states and provinces. The proposed RTOW market design meets FERC's SMD objectives yet fits the needs of the NW, is a market design that RTOW parties can voluntarily agree to participate in, and is a market design that can be approved and implemented in a timely manner.

The Congestion Management system proposal allows for a managed transition from today's system of physical rights to a system using financial rights, a transition that will allow the parties to gain operating experience. The Congestion Management design is similar in many ways to SMD, and does include a form of Congestion Revenue Rights (CRRs) to hedge congestion costs. However, it proposes several special provisions regarding the treatment of Existing Rights. These provisions fit within the SMD framework, but are intended to address specific regional characteristics of the Northwest during the transition.

The guiding principles used to develop these special provisions relating to Existing Rights are:

- During the transition to a new market design, pre-existing service should be preserved with no undue degradation to reliability or adequacy;
- Existing rights honored must be accompanied by the amount of congestion management assets (physical transmission "wire", Remedial Action Schemes (RAS), etc.) needed to adequately support those rights.
- The transition period for existing rights should be for the term of those rights;
- Translation of existing rights from the physical to financial system should neither expand nor diminish those existing rights;
- Conversion of pre-existing rights to Financial Transmission Options - RTOW's version of CRRs - is voluntary; should not be through mandatory auction, and
- During the transition, participants should have the means to manage cost risk similarly to the way they manage such risk today, and not be subject to significant cost shifts.

A. Brief Description of Proposed RTOW Congestion Management and Financial Rights Methodology

RTOW has adapted a form of locational pricing to manage congestion and price balancing energy. RTOW will ensure comparable and non-discriminatory open access to all by providing a flexible "accept all schedules" transmission service (RTOW Service) with the provision that schedulers are subject to any resulting congestion costs. RTOW nodal prices will be determined by a security constrained least cost re-dispatch calculation using voluntary generation inc. and dec. bids.

Financial hedges to offset congestion costs are available two ways:

- a) Financial Transmission Options (FTOs) produce a credit to offset the congestion cost of a schedule, are directional, tradable, and can be obtained via auction, expansion, or bi-lateral trades. FTOs may also be obtained through conversion of pre-existing contract rights. (See below). They are defined as a financial right between an injection and withdrawal pair in a given direction and produce a credit to the holder equal to the positive value of congestion between the pair for a schedule made by the holder anywhere on the system.
- b) Cataloged Transmission Rights (CTRs) produce credits to offset congestion costs between injection and withdrawal pairs for schedulers who had pre-existing rights and who chose not to convert to FTOs. If a pre-existing right holder does not convert to RTOW Service, the CTRs are held and used by the RTOW and Participating Transmission Owner (PTO) for honoring pre-existing obligations. CTRs are not tradable, only apply between the specific injection and withdrawal pair defined by the existing right when scheduled, and are managed by RTOW in the aggregate to provide CTR service to the PTO to cover pre-existing obligations.

B. Process for Transition from Pre- and Post-888 Transmission Service Contracts to RTOW Service

Customers with pre-existing rights can elect to take RTOW Service by:

- Converting to RTOW Service and translating their rights into FTOs, or by
- Keeping their pre-existing rights and continue taking existing service from their PTO who in turn takes RTOW CTR Service on their behalf to support their customer pre-existing obligations, or by
- Directly taking RTOW CTR service from RTOW.
- As existing transmission contracts expire, customers will be expected to take RTO Service and acquire FTOs as needed. It should be noted that where pre-existing contracts have rollover rights, these will be recognized.

RTOW Service is similar to SMD NAS service in that a scheduler who has paid their license plate access fee can schedule between any injection and withdrawal points on the RTOW system. RTOW CTR service only provides congestion cost protection between the injection and withdrawal point specified in the pre-existing right as documented in the Catalog.

For RTO CTR service, PTOs will work with RTOW to catalog customers' existing rights by itemizing all obligations, optionality/flexibility, and congestion management asset requirements defined by existing contracts. RTOW performs a sufficiency test to make sure the obligations and assets balance. All pre-888, firm PTP as well as Network Service under the OATT contracts are cataloged and can be used to obtain FTO or CTR hedges. It is proposed that native load customers without agreements or explicit Network Service contracts would have their service translated to Network Service contract rights and then cataloged.

A customer that takes RTOW Service and obtains FTOs does so by suspending its pre-existing contracts and negotiating with the PTO and RTOW for FTOs. FTOs are determined through a feasible dispatch calculation that requires an up front selection and lock in of contract injection and withdrawal points and other optionality provisions.

In the scheduling process for all customers taking CTR service, RTOW combines their specific schedule requirements, as they become clear, utilizes the PTOs' CTRs in aggregate, then along with netting and diversity meets their aggregated schedule requirements. Residual ATC that is expected to remain after the CTR schedules are satisfied and after netting and diversity are exploited is auctioned by RTOW as FTOs in the Residual Auction.

C. Special Circumstances and Provisions Provided by RTOW During the Transition Period

1) Initial Rights Assignment

Over-commitment of System Capability from full translation of Existing Rights is solved by use of CTR service. The system currently works with minimal congestion because the PTOs take advantage of the diversity of use within their systems. The configuration of the system, TTC, and existing contract rights have evolved to fit this diversity. Key examples include:

- (a) Long distances and expensive transmission with capacity limited by system stability and voltage collapse concerns.
- (b) Limited transmission investment and expansion over the years due to cost recovery uncertainty has been compensated by maximizing the existing system's TTC via rating methods accounting for diversity (one-hour flow test), nomographs, and RAS.

There are a very large number of existing bilateral, transmission-use contracts in the RTOW area. Many are used to capture the hydro-thermal coordinated operational efficiencies within the NW and WI. The contracts by necessity allow for the flexibility needed to integrate the inherent variability of the existing system of large hydro capacity constrained by many non-power requirements and contracts in the western portion of the system with the inherent stability of remote thermal base loaded generation in the eastern portion of the system. The energy-limited nature of the hydro capacity is complimented by the base load thermal production when integrated together through transmission service. This integration must account for needs and diversity across the geography of the whole system (that is thermal and hydro), as well as over the annual hydro planning horizon time frame.

- If all CTR rights were initially allocated so as to preserve the existing flexibility of use, whether as full FTO "strips" or allocated up front via a complex method that chopped the strips into hourly pieces, it is certain that existing rights holders would see a significant reduction of their pre-existing rights.
- The management of CTR rights in the aggregate (pooling of rights) by RTOW to provide CTR service insures minimum cost risk potential and a transition period during which existing rights holders can gain the confidence and operating experience needed to convert to FTOs.

2) Special Provisions for Load Growth

Transmission financial rights associated with load growth were designed in the RTOW proposal to fit with the CTR methodology. Existing rights with provisions for load growth will be honored by RTOW as per the contract if the customer elects not to convert to FTOs and continues to take CTR service after conversion to RTOW Service. However, RTOW will perform periodic sufficiency tests to ensure that the PTO provides the assets required to meet

those CTR obligations. Under certain circumstances, RTOW will have the ability to backstop these system expansion decisions and cause necessary facilities to be built if the customer's PTO fails to provide sufficient facilities to accommodate the load growth.

If a customer elects to convert to RTO Service and convert its CTR rights to FTOs, the customer will from then on need to serve new load growth through the acquisition of additional FTOs if they elect to hedge congestion costs. These FTOs can be obtained by funding expansion on the system with the location, amount of expansion, and resulting FTOs being negotiated with RTOW through its planning process. These FTOs could also be obtained through the RTO auction, trades, or purchase if available. Third parties can also receive FTOs between injection and withdrawal points on the RTOW system by funding expansion.

3) FTO Revenues

FTO congestion credits accrue to the FTO holder as offsets against congestion costs arising from their transmission use schedules. Credits are provided up to but not exceeding an FTO holder's total congestion cost for a given hour.

A special provision of the RTOW design is that revenue from the auction of FTOs resulting from existing ATC on the system goes into a special Revenue Replacement Pool. This pool is used to offset lost short-term firm and non-firm transmission revenues (not captured in transfer charges for long term firm pre-existing rights), and revenues lost after RTOW start-up as a result of expiring long-term contracts, and to possibly reduce RTOW export charges. RTOW's ability to capture the diversity during the aggregation of CTR use may make it possible to increase the number of FTOs issued from existing ATC.

Customers who convert their existing rights and hold FTOs can sell these FTOs and retain the sale revenues. If a customer pays for expansion on the system, thereby creating new ATC, it translates to FTOs (through a negotiated settlement process between RTOW and the customer). When sold in the related RTOW auction, these FTO auction revenues flow to the customer supporting construction.

- The RTOW transmission system has two distinct characteristics. Along the major river system in the west is a relatively robust grid that integrates the high capacity but energy constrained hydro system and allows for variations in amount and location of hydro generation up and down the river system and over the operating period extending forward through the annual optimized hydro-thermal planning horizon. The remaining system is characterized as relatively lean. This transmission serves local loads and delivers coordinated energy from the remote thermal base loaded plants in the eastern part of the RTOW system where large coal resources are located. A high level of bilateral contracts provides for the integrated and coordinated operation of the hydro-thermal system that provides a similar energy product at a similar price to customers throughout much of the region.
- Because of the variability of the hydro system, there has usually been a large amount of short term service for Through and Out-type service on the robust portion of the existing NW transmission system, but very little long term firm ATC available. Several parties to RTOW currently utilize significant amounts of short-term transmission service for short-

term power sales outside of the RTOW area. Today, RTOW parties depend on significant short-term transmission revenues as offsets to fixed cost recovery and transmission rates for their customers. The loss of these short-term revenues has the potential to create a substantial cost shift among RTOW parties if they are not replaced.

- The RTOW license plate pricing methodology is a negotiated compromise related to Company license plate area rates, pre-existing rights, pre-existing non-firm use, and export charges. The methodology utilizes transfer charges between PTOs to reflect long term firm transmission service on other PTO systems. The revenues previously collected from short term transmission sales are replaced by a pool of revenues collected from External Intertie Access Fees (export charges) and any surplus generated by congestion management to include RTOW's FTO residual auction revenues from existing ATC. If cumulative revenue collection is outside of upper or lower bounds, then RTOW must reduce or increase charges to adjust the balance. One alternative for adjusting the balance in the case of over collection would be to reduce the export fee.

4) Mandatory Auction is Problematic

Mandatory auctions in RTOW (including initial allocation) are not workable. Because of two special conditions in the RTOW footprint, a mandatory auction of all ATC as CRRs with allocation of auction revenues on some basis such as load ratio share will result in large and unworkable cost shifts between parties. First, the system is not homogeneous (as described above). For example the eastern part of the system involves long lean but expensive transmission and covers a relatively sparse population base. Customers in different parts of the system have paid significantly different amounts for transmission capability to deliver network resources.

Secondly, bilateral contracts are also widely varied. Existing rights are highly shaped in RTOW. They follow load, apply at specific times, or have other time dependent features. Issuing fixed strips in an auction changes the nature of rights and drives to over subscription. Over-subscription then forces a pro-rata reduction and an increase in cost to those who loose their current rights. For these reasons, RTOW will catalog initial existing transmission rights that will translate into FTO's that can be sold by the holder, or CTR service.

5) Special Provisions for Load and Generation Pockets

Many load areas as well as generation areas in the RTOW footprint are connected into the main system by long lean transmission that was designed to just fit the local load or generator including reserves. In many instances, specific local generator characteristics (voltage, vars, output levels, Remedial Action Schemes) are required to support the transmission capability in, out, or through the area. Also, loads in certain areas cause the transmission through the area to be balanced allowing more transmission capacity for through schedules. Pre-Existing rights to and from these areas will be cataloged with the rights assigned to the loads that have historically held and relied on them. However, there may be potential for congestion through these areas and the potential of market power by local generation or load response that would need to be addressed through, market mitigation measures. RTOW has yet to develop market mitigation measures but understands that some measures will need to be part of the design.

6) Pre- and Post-888 Existing Contracts

It is proposed in the RTOW market design that rights from pre-888 as well as post-888 transmission service contracts be treated the same as far as their option to be used as CTRs or be converted to FTOs. This is necessary to encourage non-jurisdictional PTOs with post-888 contracts and whose customers may not want mandatory conversion at this time to voluntarily join and support RTOW.

7) Financial Transmission Rights are Options, not Obligations in RTOW

Under an LMP model, schedules can face a positive congestion price, and others a negative price. In the RTOW market design, schedulers are only exposed to pay for the positive congestion costs (price difference between the injection and withdrawal node). Flow patterns in RTOW are uniquely complex. They vary both seasonally (to meet winter and summer load peaks) and can even vary diurnally over the day/night (as the eastern thermal plants “trickle charge” the western hydro storage and hydro generation cycles). The pattern of congestion is correspondingly complex, with flows and counter flows co-existing on the same flow paths and TTC.

If RTOW issued financial rights as obligations (CRRs), rights holders that traditionally only schedule in one direction would either lose the value of their hedge, have to find holders willing to accept CRRs with a negative value, or RTOW would have to develop an hourly/daily FTO product and accept back many FTOs. Given the variability of hydro production, system flows reverse seasonally and even daily, so the holders of current transmission rights, which are effectively options, would face a new risk if rights are issued as obligations instead. An existing user faces no incremental cost if it chooses not to schedule.

Issuing rights as options (FTOs) meets NW customer needs. By using a pool of transmission rights to meet the needs of CTR holders from a pool of transmission capacity, RTOW will be able to exploit netting and diversity of load and resources from existing uses and to release the value of unused system capacity to new FTOs. By limiting total CRR issuance to the capacity of the transmission system, RTOW will be able to avoid risking revenue inadequacy.

8) Flexibility of CTRs and Incentives for Early Schedule Commitment

Many of the existing transmission contracts in the NW allow for the flexibility to change schedules after the pre-schedule time frame and into the operating hour. This flexibility is required because of the normal variations in the hydro-thermal system as well as variations caused by non-power requirements and contracts. Because of this, RTOW must limit some FTO issuance to insure that it can cover the cost of congestion re-dispatch if the schedule is changed after pre-schedule.

To release the full capacity of the network and allow for additional FTOs to be issued, the RTOW market design provides a method whereby an existing rights holder may commit to limit the use of this flexibility in its scheduling rights (*i.e.*, give up its optionality prior to pre-schedule) in exchange for revenues derived from the sale of additional FTOs.

If the rights holder makes this commitment, it then becomes responsible for the resulting congestion cost if it does change its schedule after the commitment is made. RTOW is able to auction additional FTOs based on the capacity released by the early scheduling.

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Note: This paper reflects the author's interpretation of the current RTO West proposal and may not reflect an officially approved RTO West position.